



Carnegie Mellon University  
Software Engineering Institute

# Defining Enterprise Performance Measures for IT Organizations

**GSA ArchitecturePlus**

**Seminar**

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**Software Engineering Institute**



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# Outline

**Some questions about performance measurement:**

- **What is performance measurement?**
- **Who is the audience/consumer of performance information?**
- **How are the data for performance measurement produced?**
- **What do the results mean?**

**A process for defining performance measures**



# What is Performance Measurement

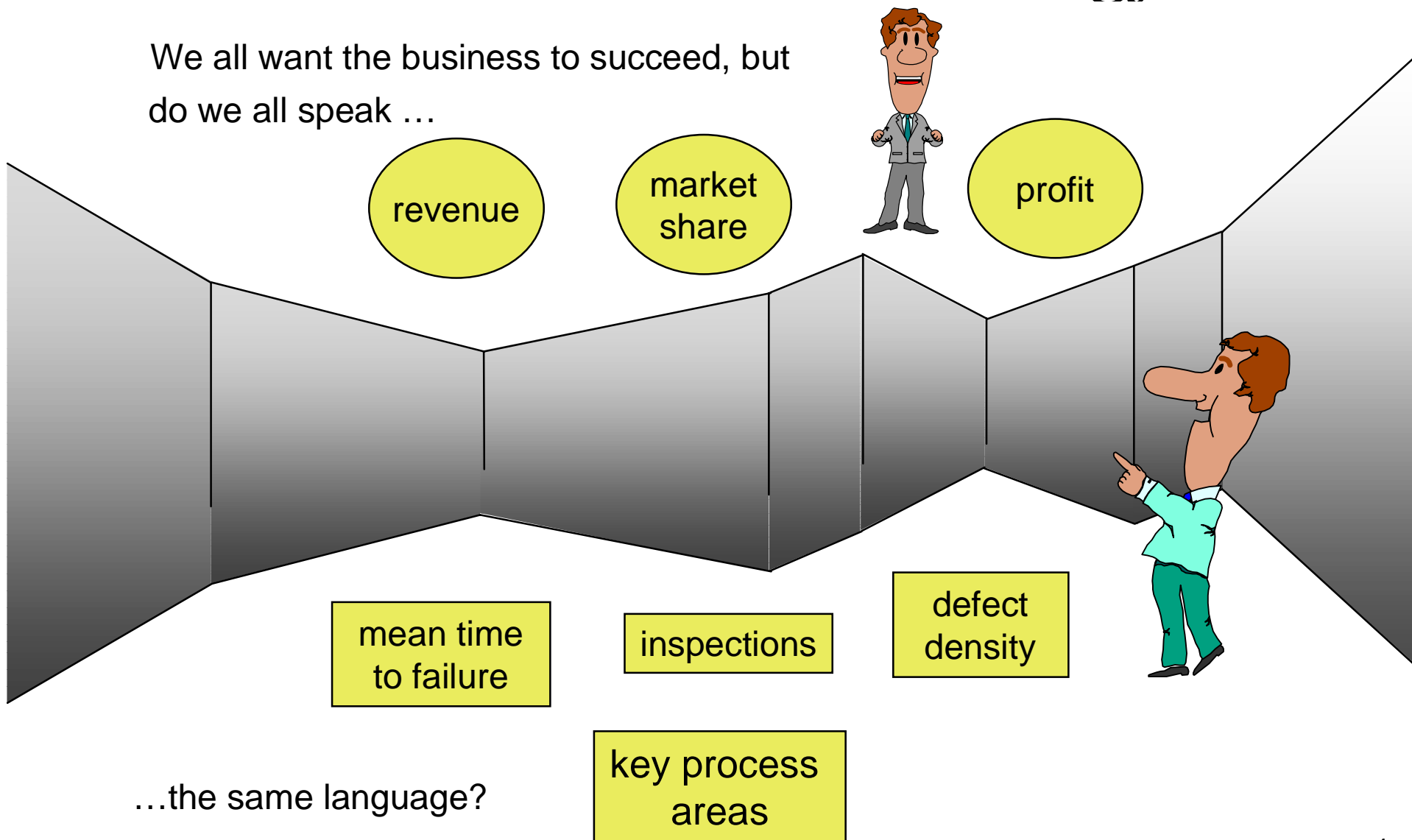
***Quantitative*** characterization of an *organization's* accomplishment of some *aspect* of its *goals*

- **quantitative** - need something more discriminating than success/failure, yes/no
- **organization** - focus is on the organization or enterprise view, not a specific project or program
- **aspect** - performance is multidimensional, what to measure is not obvious
- **goals** - for measurement to be meaningful, we need a reference point for comparison and judgement



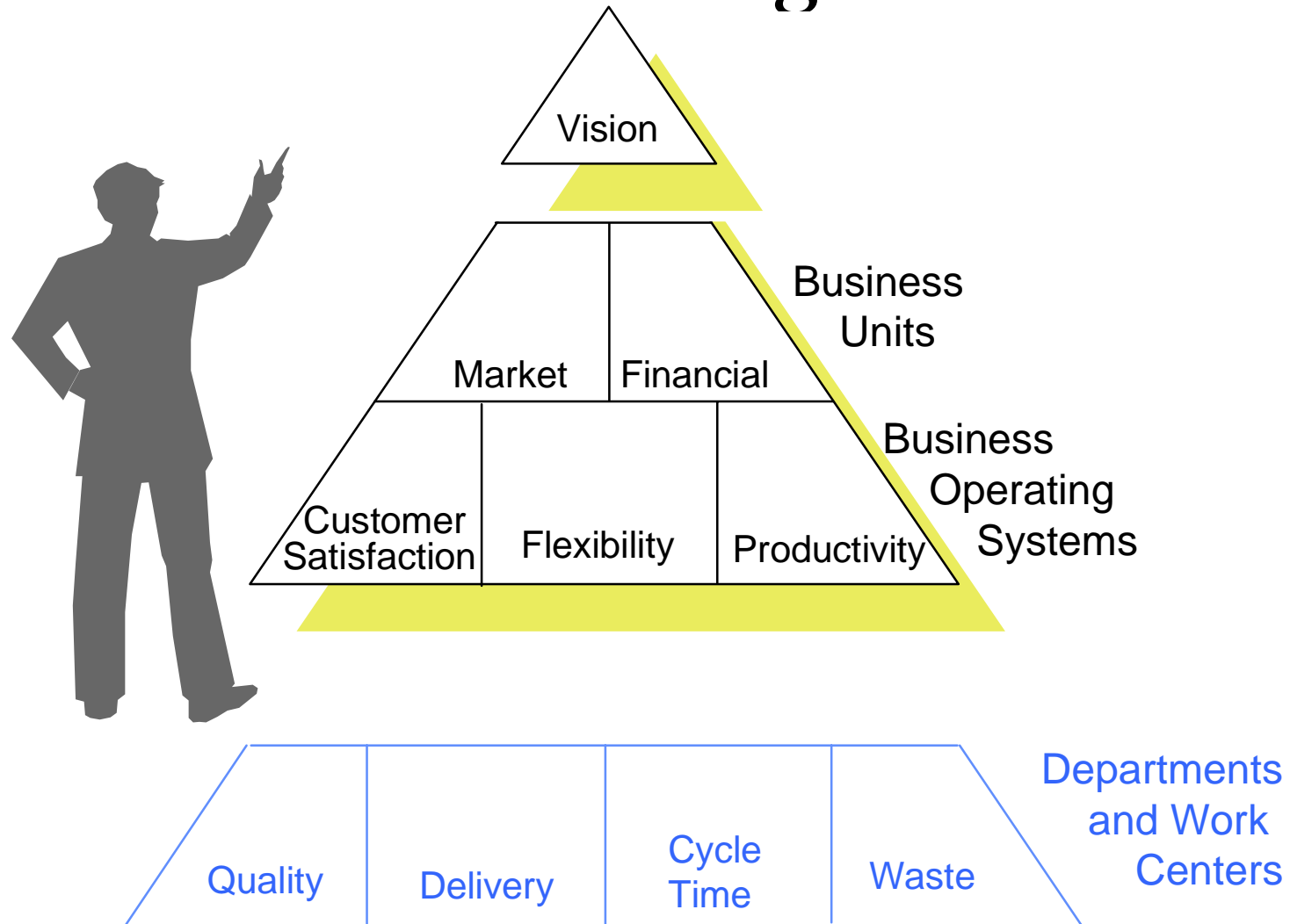
# Business and Technology

We all want the business to succeed, but  
do we all speak ...



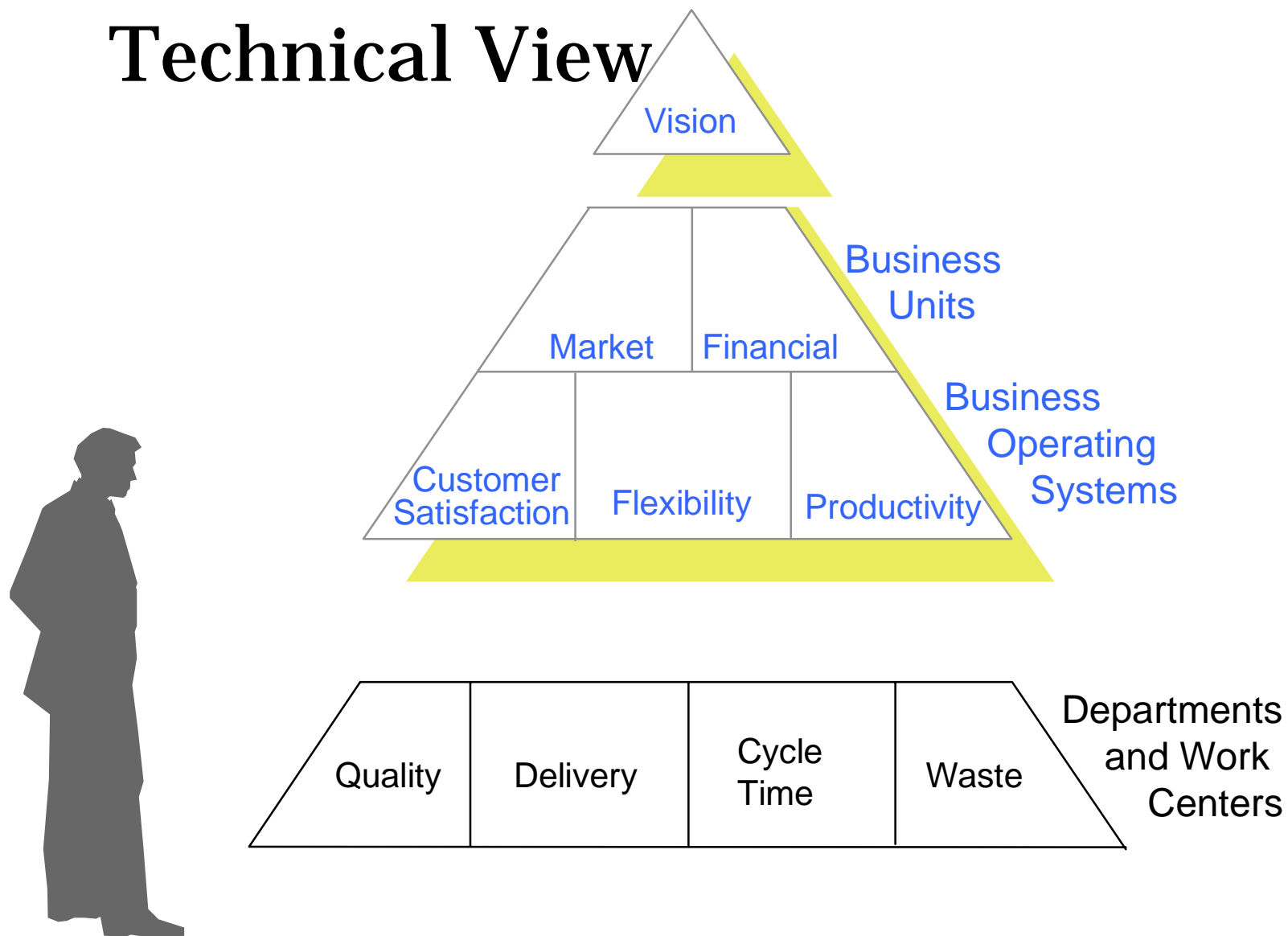


# Business Manager's Attention





# Technical View





# Who is the Audience

**Senior management - for strategic decisions**

- **business managers**
- **IT managers**

**Improvement team - to implement improvements  
and know how well they are doing**

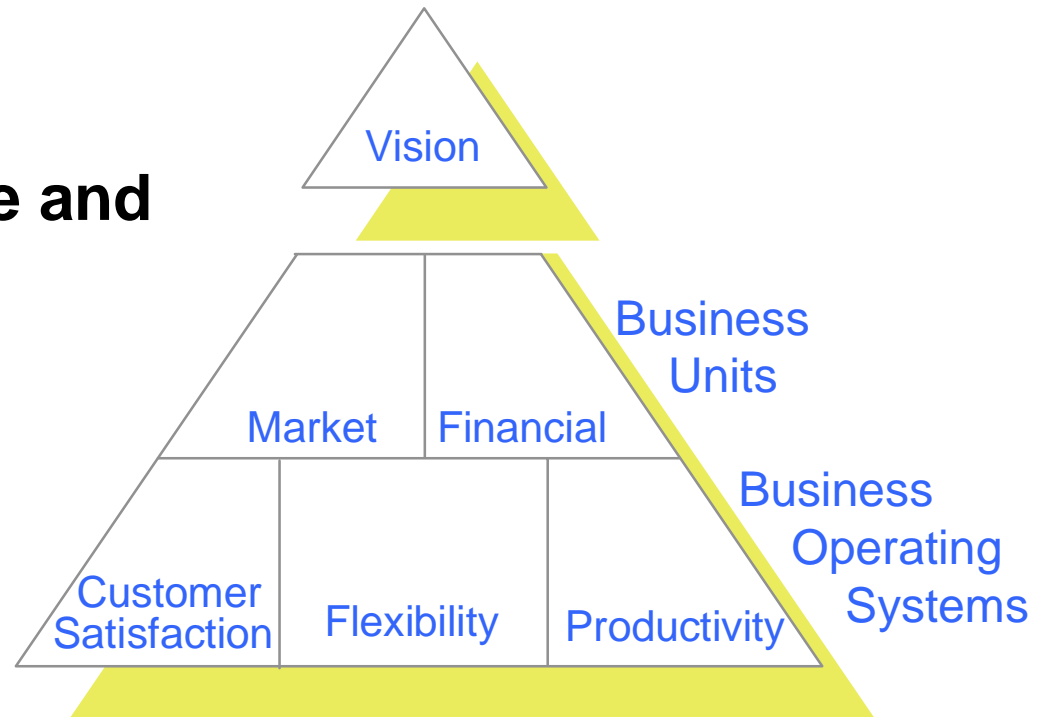
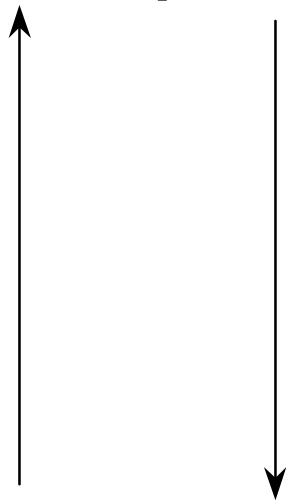
- **IPTs**
- **IT process action teams**

**Customers - to evaluate suppliers and understand  
their capability**

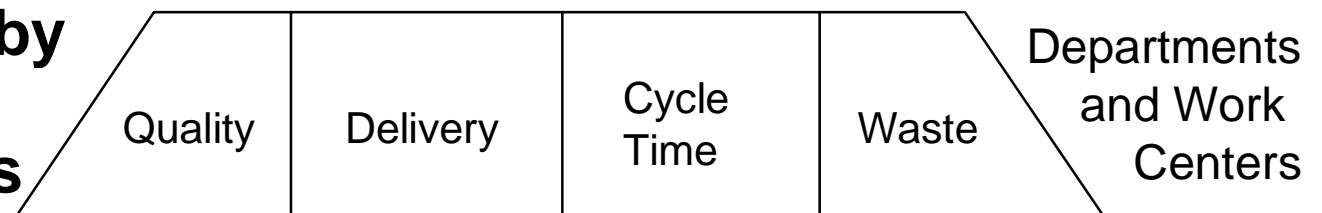


# How are the data produced

**Information used to  
assess performance and  
guide improvement**



**Data generated by  
work processes  
and transactions**







# What do the results mean

**Accomplished a goal - has the goal been met**

**Progress towards a goal - are trends moving in the right direction according to schedule**

**Impending threat - can signal risk of not meeting future goal**

**Guidance for improvement - what should we look at as an opportunity for improvement**

**Competitive position - ranking or performance relative to competitors**



# A Balanced Perspective on Performance

Can improvement in  
one area be made without  
sacrificing another?

**Financial**  
How do we look  
to shareholders?

**Customer**  
How do customers  
see us?

**A Balanced  
Perspective**

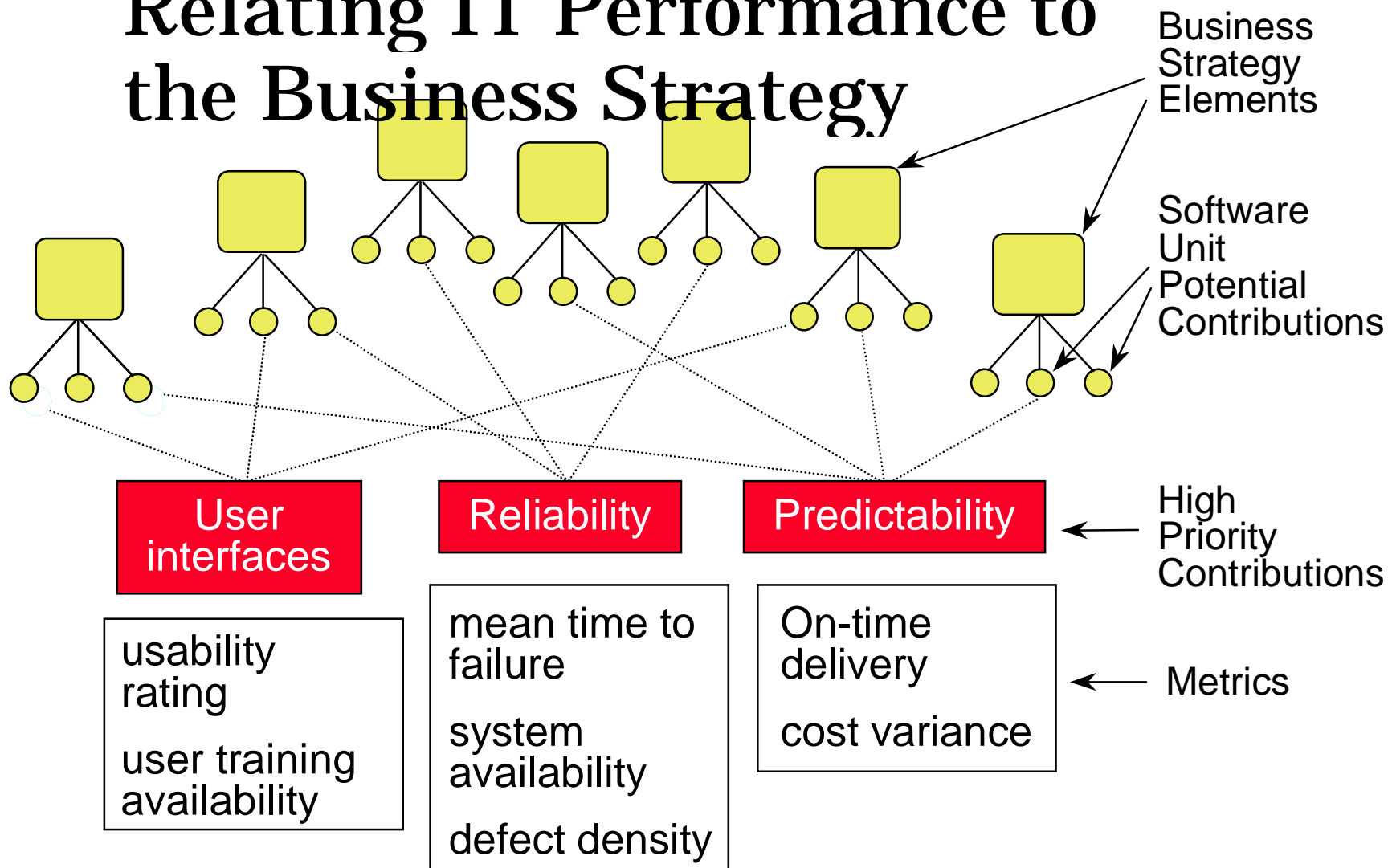
**Internal  
Business**  
What must we  
excel at?

**Innovation  
and Learning**  
Can we continue to  
improve and create  
value?

Watch out for masked  
trade-offs, unintended  
consequences



# Relating IT Performance to the Business Strategy





# Defining Performance Measures

## Indicator Template

### Measures

Defects  
Cost of Quality  
Schedule Predictability  
Effort Predictability  
Cycle Time  
Maintenance Effort  
Project Mix  
Customer Satisfaction

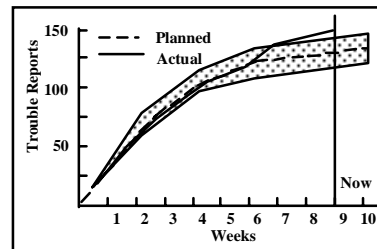


### INDICATOR TEMPLATE

Objective \_\_\_\_\_

Questions \_\_\_\_\_

Visual Display



Input(s)

Data Elements \_\_\_\_\_

Responsibility  
for Reporting \_\_\_\_\_

Form(s) \_\_\_\_\_

Algorithm \_\_\_\_\_

Assumptions \_\_\_\_\_

Interpretation \_\_\_\_\_

X-reference \_\_\_\_\_

Probing Questions \_\_\_\_\_

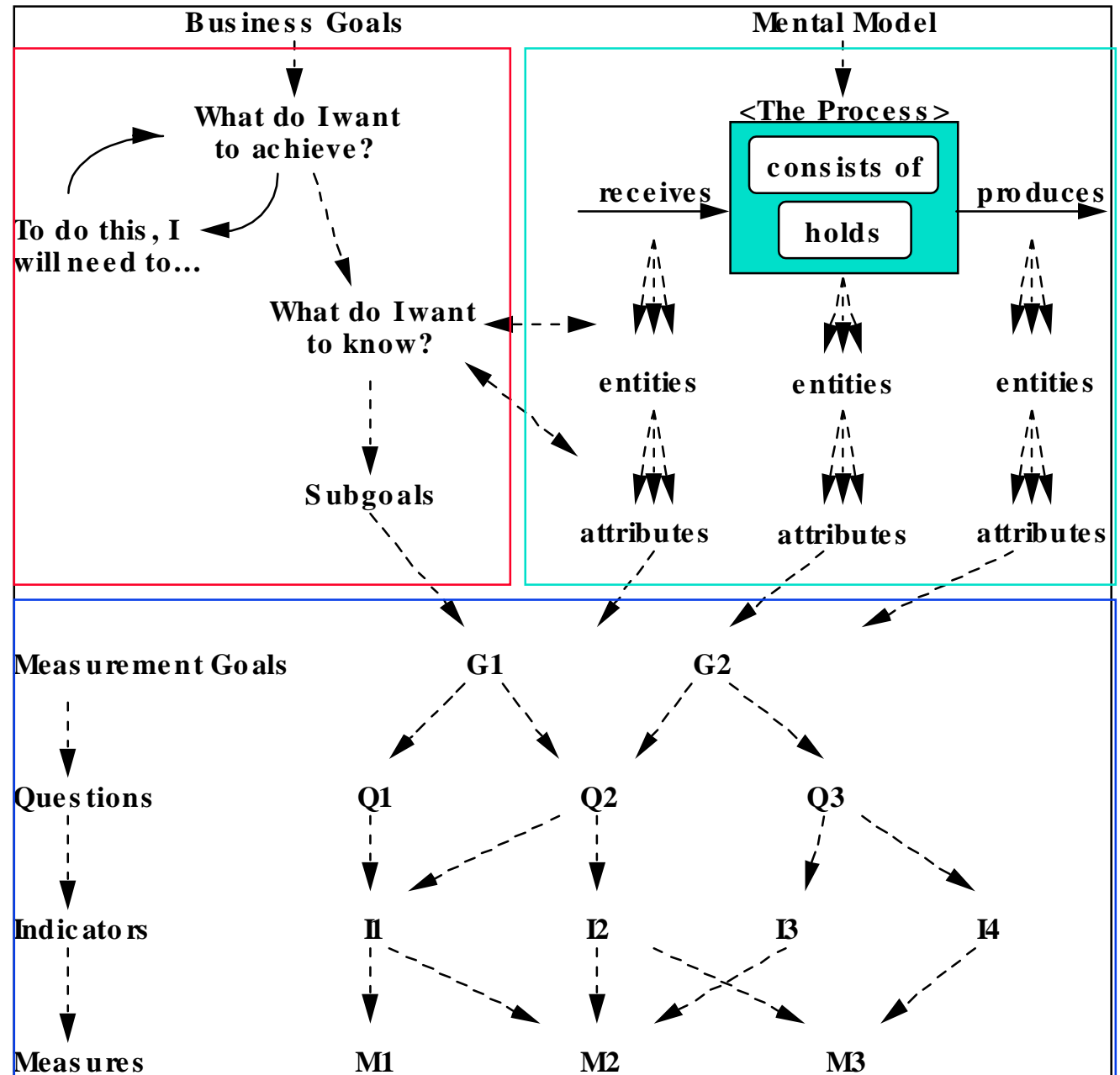
Evolution \_\_\_\_\_



Business Goals define the Need

The Process provides the opportunity

Alignment is the Key



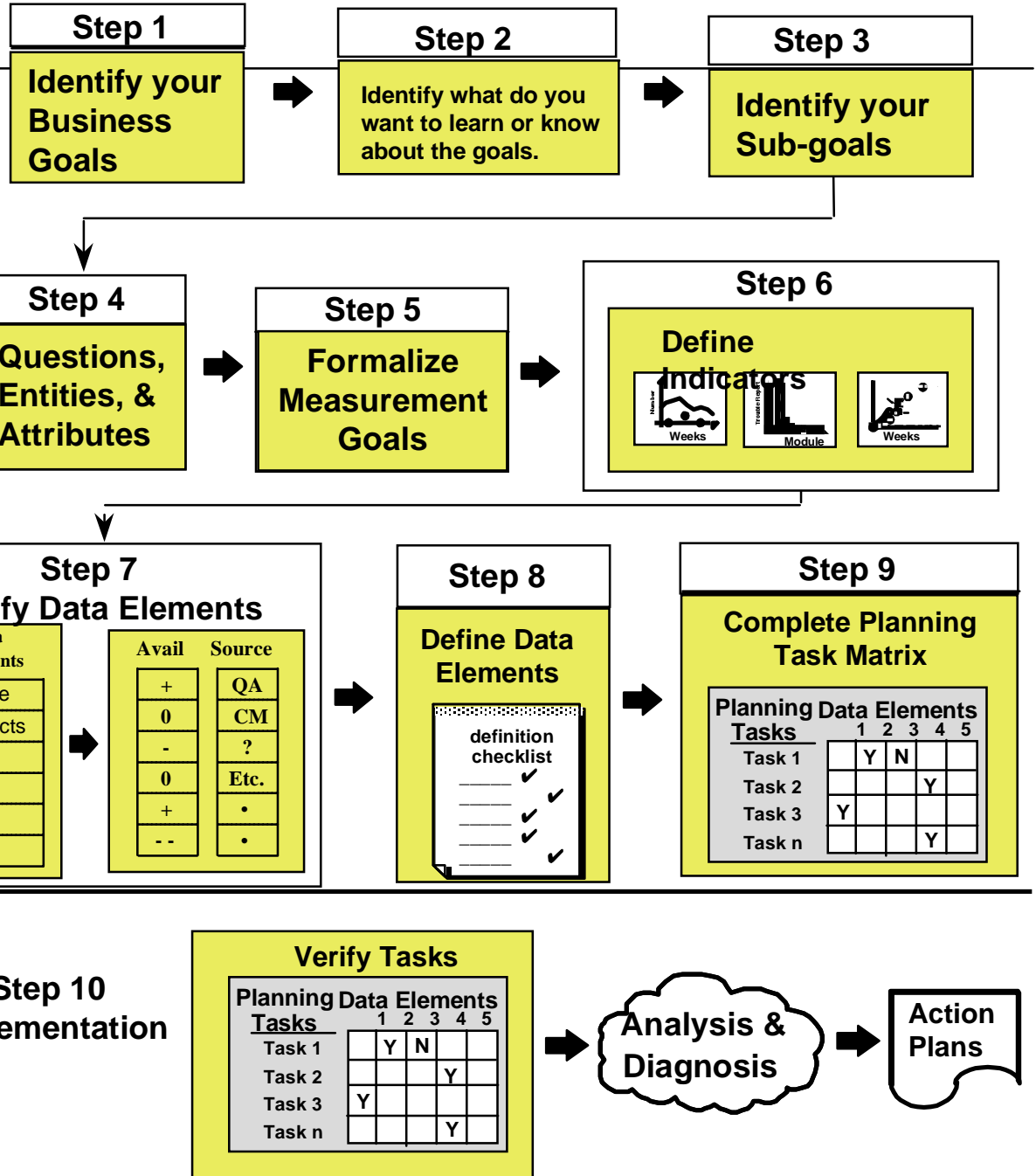


# Goal-Driven Process Steps

Measurement  
Workshop

Post  
Workshop

Step 10  
Implementation





# Example: Process Improvement Goals

## Internal Processes

- increase productivity by a factor of 2 over 5 years
- reduce development time by 40% over 5 years
- improve quality by a factor of 5 over 5 year
- reduce maintenance effort by 40% over 5 years

## Customer Satisfaction

- improve predictability to within 10% over 5 years



# Enterprise Metrics

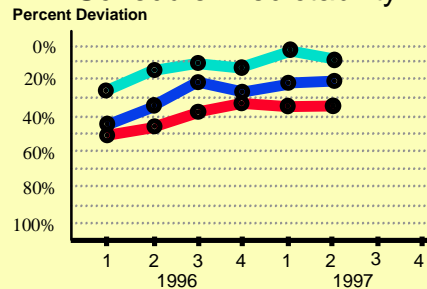
## Project Size:

Small

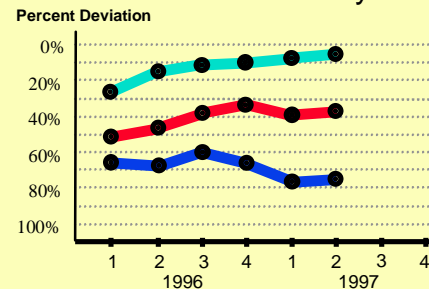
Medium

Large

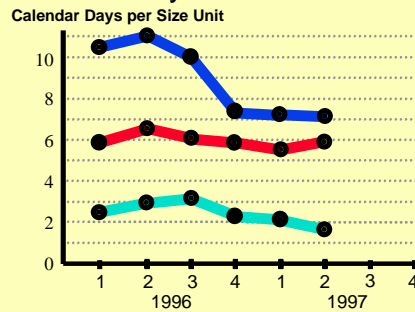
### Schedule Predictability



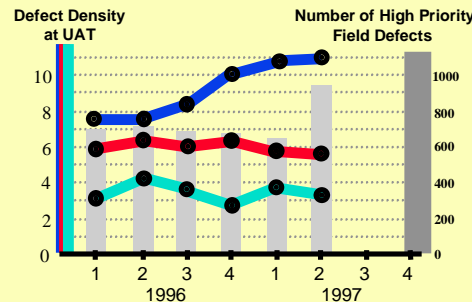
### Effort Predictability



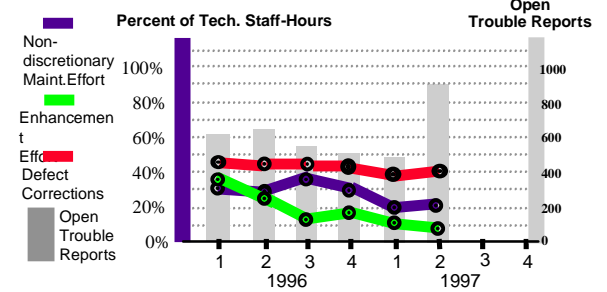
### Cycle Time



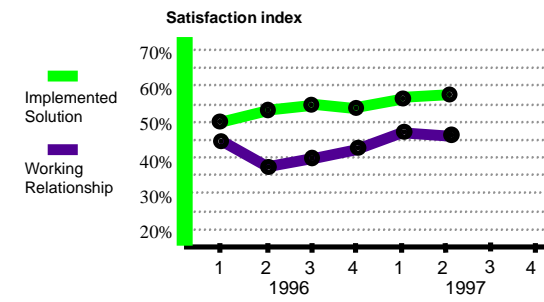
### Quality



### Maintenance Effort



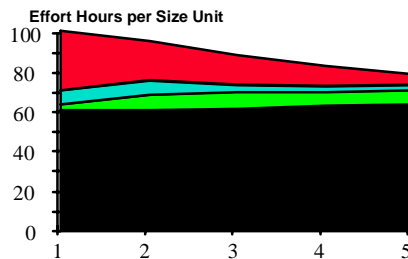
### Customer Satisfaction



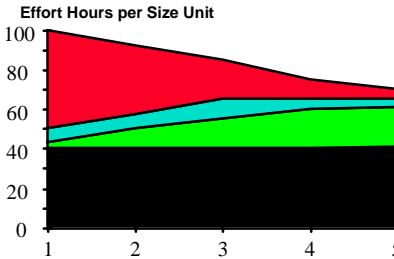
## Cost of Quality:

Rework  
Appraisal  
Prevention  
Performance

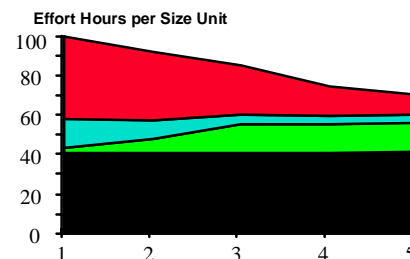
### COQ – Large Projects



### COQ – Medium Projects



### COQ – Small Projects







# Summary

**IT cannot do this alone**

- **requires a business strategy**
- **requires a customer life-cycle perspective**
- **business and IT managers must agree on the priority areas to which IT contributes**

**Alignment of measures is key**

**Action must result from the information**

**Real improvement can only be gauged by multiple measures**



# For more information

## **SEI**

- [\*\*http://www.sei.cmu.edu\*\*](http://www.sei.cmu.edu)
- [\*\*http://www.sei.cmu.edu/technology/measurement\*\*](http://www.sei.cmu.edu/technology/measurement)

## **Performance Measurement**

- [\*\*http://www.itpolicy.gsa.gov/mkm/pathways/pp03link.htm\*\*](http://www.itpolicy.gsa.gov/mkm/pathways/pp03link.htm)
- [\*\*http://www.dtic.mil/c3i/c3ia/itprmhome.html\*\*](http://www.dtic.mil/c3i/c3ia/itprmhome.html)